Listing of Claims

The below listing of claims will replace all prior versions of claims in the application.

1. (Cancelled)

2. (Cancelled)

3. (Currently Amended) The device of claim 22 ~~claim 2~~, wherein the numerical value conversion from the arbitrary unit to the natural unit has a linear relationship described by the equation $D_N = m\ D_A + c$, where D_A is the digital input value, D_N is the digital output value, m is a slope coefficient and c is an offset coefficient, and the plurality of coefficients comprises a plurality of coefficient pairs, each coefficient pair comprising a slope coefficient and an offset coefficient.

4. (Currently Amended) The device of claim 22 ~~claim 2~~, wherein the numerical value conversion from the arbitrary unit to the natural unit has a non-linear relationship and the plurality of coefficients implements the numerical value conversion in a piecewise-linear fashion approximating the non-linear relationship.

5. (Original) The device of claim 4, wherein the look-up table stores the plurality of coefficients for a plurality of linear segments for performing the piecewise-linear numerical value conversion, each linear segment being described by the equation $D_N = m\ D_A + c$, where D_A is the digital input value, D_N is the digital output value, m is a slope coefficient and c is an offset coefficient for the respective linear segment, and the plurality of coefficients comprises a plurality of coefficient pairs, each coefficient pair comprising a slope coefficient and an offset coefficient for the respective linear segment.

6. (Original) The device of claim 4, wherein the non-linear relationship comprises a logarithmic relationship.

7. (Currently Amended) The circuit of claim 22 ~~claim 2~~, wherein digital input value comprises an N-bit digitized value in an arbitrary unit generated by an analog-to-digital converter and the second unit comprises a natural unit of physical measurement.

8. (Cancelled)

9. (Currently Amended) The device of claim 22 ~~claim 8~~, wherein the first parameter comprises an operating temperature associated with the system providing the digital input value and wherein each coefficient in the look-up table corresponds to an assigned range of the operating temperature.

10. (Cancelled)

11. (Original) The device of claim 10, wherein digital input value comprises a digitized voltage value in an arbitrary unit generated by an analog-to-digital converter and the second unit comprises a Decibel unit.

12. (Cancelled)

13. (Currently Amended) A method for performing numerical value conversion, optimizing in speed and size, of an N-bit digital input value in a first unit being an arbitrary unit to a second unit being a natural unit, the second unit expressed in a natural unit of physical measurement ~~the first unit~~ being related to the ~~second~~ first unit by a first equation, comprising:

storing a plurality of coefficients in a look-up table stored in a memory for performing the numerical value conversion from the first unit to the second unit;

selecting an indexing parameter from a first parameter and a second parameter using a select input signal, the first parameter comprising an operating temperature associated with the system providing the N-bit digital input value and the second parameter comprising a most significant k bits of a received power parameter, where k is less than N, and the first and second parameters are selected to selectively operate the device for temperature compensation or for non-linear conversion;

indexing the look-up table using ~~a first~~ the indexing parameter to provide a selected coefficient pair of slope and offset coefficients;

providing the N-bit digital input value and the selected coefficient pair of slope and offset coefficients to an arithmetic logic unit; and

performing a numerical value conversion at the arithmetic logic unit based on the first equation and using the N-bit digital input value and the selected coefficient pair of slope and offset coefficients to compute a digital output value in the second unit from the digital input value in the first unit.

14. (Cancelled)

15. (Cancelled)

16. (Currently Amended) The method of claim 13 ~~claim 15~~, wherein storing a plurality of coefficients in a look-up table for performing the numerical value conversion from the first unit to the second unit comprises:

storing a plurality of coefficients in the look-up table wherein the numerical value conversion from the arbitrary unit to the natural unit has a linear relationship described by the equation $D_N = m\ D_A + c$, where D_A is the digital input value, D_N is the digital output value, m is a slope coefficient and c is an offset coefficient, and the plurality of coefficients comprises a plurality of coefficient pairs, each coefficient pair comprising a slope coefficient and an offset coefficient.

17. (Currently Amended) The method of claim 13 ~~claim 15~~, wherein storing a plurality of coefficients in a look-up table for performing the numerical value conversion from the first unit to the second unit comprises:

storing a plurality of coefficients in the look-up table wherein the numerical value conversion from the arbitrary unit to the natural unit has a non-linear relationship and the plurality of coefficients implements the numerical value conversion in a piecewise-linear fashion approximating the non-linear relationship.

18. (Original) The method of claim 17, wherein storing a plurality of coefficients in the look-up table further comprises:

storing coefficients for a plurality of linear segments for performing the piecewise-linear numerical value conversion, each linear segment being described by the equation $D_N = m\ D_A + c$, where D_A is the digital input value, D_N is the digital output value, m is a slope coefficient and c is an offset coefficient for the respective linear segment,

wherein the plurality of coefficients comprises a plurality of coefficient pairs, each coefficient pair comprising a slope coefficient and an offset coefficient for the respective linear segment.

19. (Cancelled)

20. (Currently Amended) The method of claim 13 ~~claim 19~~, wherein the first parameter comprises an operating temperature associated with the system providing the digital input value and wherein each coefficient in the look-up table corresponds to an assigned range of the operating temperature.

21. (Currently Amended) The method of claim 13, wherein the second ~~first~~ parameter comprises the most significant three bits ~~k bits~~ of the received power parameter ~~digital input value where k is less than N~~.

22. (New) A device for performing numerical value conversion, optimizing in speed and size, of an N-bit digital input value in a first unit to a second unit being a natural unit, the second unit expressed in a natural unit of physical measurement being related to the first unit by a first equation, comprising:

a memory having stored thereon a look-up table storing a plurality of coefficients for performing the numerical value conversion from the first unit to the second unit, the look-up table being indexed using an indexing parameter to provide a selected coefficient pair of slope and offset coefficients;

a multiplexor coupled to receive a first parameter and a second parameter, the multiplexor receiving a select signal for selecting one of the first parameter and the second parameter as the indexing parameter, wherein the look-up table is indexed by the selected one of the first and second parameters; and

an arithmetic logic unit receiving the N-bit digital input value in the first unit and the selected coefficient pair of slope and offset coefficients from the look-up table, the arithmetic logic unit performing the numerical value conversion based on the first equation and using the N-bit digital input value and the selected coefficient pair to compute a digital output value in the second unit,

wherein the first parameter comprises an operating temperature associated with the system providing the N-bit digital input value and the second parameter comprises a most significant k bits of a received power parameter, where k is less than N, and the first and second parameters are selected to selectively operate the device for temperature compensation or for non-linear conversion.

23. (New) The device of claim 22, wherein the second parameter comprises the most significant three bits of the received power parameter.